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PROTECTION OF OCEANS, ALL KINDS OF SEAS INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

(Section II, Chapter 9, of Agenda 21)

Text submitted by the Chairman on the basis of negotiations held on document A/CONF.151/PC/100/Add.21

INTRODUCTION

1. The marine environment - including the oceans and adjacent coastal areas - forms an integrated whole that is an essential component of the global life support system, and a positive asset presenting opportunities for sustainable development. International law, as reflected in the provisions of the United Nations Convention on the Law of the Sea 1/ referred to in this chapter of Agenda 21, sets forth rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources. This requires new approaches to ocean and coastal area management and development, at the national, subregional, regional and global levels, approaches that are integrated in content, and precautionary and anticipatory in ambit, as reflected in the following programme areas: 2/

A. INTEGRATED MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF COASTAL AREAS, INCLUDING EXCLUSIVE ECONOMIC ZONES

B. MARINE ENVIRONMENTAL PROTECTION

C. SUSTAINABLE USE AND CONSERVATION OF HIGH SEAS LIVING RESOURCES

D. SUSTAINABLE USE OF LIVING MARINE RESOURCES UNDER NATIONAL JURISDICTION

E. ADDRESSING CRITICAL UNCERTAINTIES FOR THE MANAGEMENT OF MARINE ENVIRONMENT AND CLIMATE CHANGE

F. STRENGTHENING INTERNATIONAL, INCLUDING REGIONAL, COOPERATION AND COORDINATION

G. SUSTAINABLE DEVELOPMENT OF ISLANDS

[2. The implementation of the above activities by developing countries shall be commensurate with their individual levels of technological and financial capacities, their priorities in allocating resources for development needs, and ultimately dependent on the technology transfer and financial resources required and made available.]

A. Integrated management and sustainable development of coastal and marine areas, including exclusive economic zones

Basis for action

3. The coastal area contains diverse and productive habitats important for human settlements, development and local subsistence. More than half the world's population lives within 60 km of the shoreline, and this could rise to three quarters by the year 2020. Many of the world's poor are crowded in coastal areas. Coastal resources are vital for many local communities and indigenous people. The Exclusive Economic Zone (EEZ) is also an important marine area where the States manage the development and conservation of natural resources for the benefit of their people. For small island States or countries, these are the areas most available for development activities.

4. Despite national, subregional, regional and global efforts, current approaches to the management of marine and coastal resources have not always proved capable of achieving sustainable development and coastal resources and the coastal environment of the littoral are being rapidly degraded and eroded in many parts of the world.

Objectives

5. Coastal States commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their national jurisdiction. To this end, it is necessary to inter alia:

(a) Provide for an integrated policy and decision-making process, including all involved sectors to promote compatibility and balance of uses;

(b) Identify existing and projected uses of coastal areas and their interactions;

(c) Concentrate on well-defined coastal management related issues;

(d) Apply preventive and precautionary approaches in project planning and implementation, including prior assessment and systematic observation of the impacts of major projects;

(e) Promote the development and application of methods, such as national resource and environmental accounting, that reflect changes in value resulting from uses of coastal and marine areas, including pollution, marine erosion, loss of resources and habitat destruction;

(f) Provide access, as far as possible, for concerned individuals, groups and organizations to relevant information and opportunities for consultation and participation in planning and decision-making at appropriate levels.

Activities

Management-related

6. Each coastal State should consider establishing, or where necessary strengthening, appropriate coordinating mechanisms (such as a high-level policy planning body) for integrated management and sustainable development of coastal and marine areas and their resources, at both the local and national levels. Such mechanisms should include consultation, as appropriate, with the academic and private sectors, non-governmental organizations, local communities, resource user groups, and indigenous people. Such national coordinating mechanisms could provide inter alia for:

(a) Preparation and implementation of land and water use and siting policies;

(b) Implementation of integrated coastal and marine management and sustainable development plans and programmes at appropriate levels;

(c) Preparation of coastal profiles identifying critical areas, including eroded zones, physical processes development patterns, user conflicts and specific priorities for management;

(d) Prior environmental impact assessment, systematic observation and follow-up of major projects including the systematic incorporation of results in decision-making;

(e) Contingency plans for human induced and natural disasters, including likely effects of potential climate change and sealevel rise, as well as contingency plans for degradation and pollution from anthropogenic origin, including spills of oil and other materials;

(f) Improvement of coastal human settlements, especially in housing, drinking water and treatment and disposal of sewage, solid wastes and industrial effluents;

(g) Periodic assessment of the impacts of external factors and phenomena to ensure that the objectives of integrated management and sustainable development of coastal areas and the marine environment are met;

(h) Conservation and restoration of altered critical habitats;

(i) Integration of sectoral programmes on sustainable development for settlements, agriculture, tourism, fishing, ports and industries affecting the coastal area;

(j) Infrastructure adaptation and alternative employment;

(k) Human resource development and training;

(l) Public education, awareness and information programmes;

(m) Promoting environmentally sound technology and sustainable practices;

(n) Development and simultaneous implementation of environmental quality criteria.

7. Coastal States with the support of international organizations, upon request, should undertake measures to maintain biological diversity and productivity of marine species and habitats under national jurisdiction. Inter alia, these measures might include: surveys of marine biodiversity, inventories of endangered species and critical coastal and marine habitats; establishment and management of protected areas; and support of scientific research and dissemination of its results.

Data and information

8. Coastal States, where necessary, should improve their capacity to collect, analyse, assess and use information for sustainable use of resources, including environmental impacts of activities affecting the coastal and marine areas. Information for management purposes should receive priority support in view of the intensity and magnitude of the changes occurring in the coastal and marine areas. To this end, it is necessary to, inter alia:

(a) Develop and maintain databases for assessment and management of coastal areas and all seas and their resources;

(b) Develop socio-economic and environmental indicators;

(c) Conduct regular environmental assessment of the state of the environment of coastal and marine areas;

(d) Prepare and maintain profiles of coastal area resources, activities, uses, habitats and protected areas based on the criteria of sustainable development;

(e) Exchange information/data.

9. Cooperation with developing countries, and, where applicable, subregional and regional mechanisms should be strengthened to improve their capacities to achieve the above.

International and regional cooperation and coordination

10. The role of international cooperation and coordination on a bilateral basis and, where applicable, within a subregional, interregional, regional or global framework, is to support and supplement national efforts of coastal States to promote integrated management and sustainable development of coastal and marine areas.

11. States should cooperate, as appropriate, in the preparation of national guidelines for integrated coastal zone management and development, drawing on existing experience. A first global conference to exchange experience in the field could be held before 1994.

Means of implementation

Financing and cost evaluation

[12. The total cost estimate for all countries to implement integrated management and sustainable development of coastal areas and EEZs is approximately $85 billion through the year 2000. The cost estimate for developing countries would be approximately $50 billion, or about $6 billion per year for 1993-2000.]

[13. Of the $6 billion annual estimated costs about $50 million per year between 1993-2000 in catalytic funding is proposed to support programmes for integrated management and sustainable development of coastal areas. Of this, $36 million is proposed to assist developing countries with technical cooperation and training for institutional strengthening, improvement of databases, upgrading of research and management capacity, implementation of pilot demonstration projects and production of detailed operational guidelines, plus $6 million to address global issues. The sum of $8 million is proposed to help strengthen international and regional organizations in this field.]

Scientific and technological means

14. States should cooperate in the development of necessary coastal systematic observation, research and information management systems. They should provide access to and transfer environmentally safe technologies and methodologies for sustainable development of coastal and marine areas to

developing countries. They should also develop technologies and endogenous scientific and technological capacities.

15. International organizations, whether subregional, regional or global, as appropriate, should support coastal States, upon request, in these efforts, as indicated above, devoting special attention to developing countries.

Human resource development

16. Coastal States should promote and facilitate the organization of education, and training in integrated coastal and marine management and sustainable development for scientists, technologists, managers, including community-based managers and users, leaders, indigenous peoples, fisherfolk, women and youth among others. Management, development as well as environmental protection concerns, and local planning issues should be incorporated in educational curricula and public awareness campaigns, with due regard to traditional ecological knowledge and socio-cultural values.

17. International organizations, whether subregional, regional or global, as appropriate, should support coastal States, upon request, in the areas, as indicated above, devoting special attention to developing countries.

Capacity-building

18. Full cooperation should be extended, upon request, to coastal States in their efforts for capacity-building and where appropriate, capacity-building should be included in bilateral and multilateral development cooperation. Coastal States may consider, inter alia:

(a) Ensuring capacity-building at the local level;

(b) Consulting on coastal and marine issues with local administrations, the business community, the academic sector, resource user groups and the general public;

(c) Coordinating sectoral programmes while building capacity;

(d) Identifying existing and potential capabilities, facilities and needs for human resources development and scientific and technological infrastructure;

(e) Developing scientific and technological means and research;

(f) Promoting and facilitating human resource development and education;

(g) Supporting "centres of excellence" in integrated coastal and marine resource management;

(h) Supporting pilot demonstration programmes and projects in integrated coastal and marine management.

B. Marine environmental protection

Basis for action

19. Degradation of the marine environment can result from a wide range of sources. Land-based sources contribute 70 per cent of marine pollution, while maritime transport and dumping at sea activities contribute 10 per cent each. Contaminants which pose the greatest threat to the marine environment are in variable order of importance and depending on differing national or regional situations: sewage, nutrients, synthetic organic compounds, sediments, litter and plastics, metals, radionuclides, oil/hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs). Many of the polluting substances originating from land-based sources are of particular concern to the marine environment since they exhibit at the same time toxicity, persistence and bioaccumulation in the food chain. There is currently no global scheme to address marine pollution from land-based sources.

20. Degradation of the marine environment can also result from a wide range of activities on land. Human settlements, land use, construction of coastal infrastructure, agriculture, forestry, urban development, tourism and industry can affect the marine environment. Coastal erosion and siltation are of particular concern.

21. Marine pollution is also caused by shipping and sea-based activities. Approximately 600,000 tons of oil enter the oceans each year, as a result of normal shipping operations, accidents and illegal discharges. With respect to offshore oil and gas activities, currently machinery space discharges are regulated internationally and six regional conventions to control platform discharges have been under consideration. The nature and extent of environmental impacts from offshore oil exploration and production activities generally account for a very small proportion of marine pollution.

22. A precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment. This requires, inter alia, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and/or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water. Any management framework must include the improvement of coastal human settlements and the integrated management and development of coastal areas.

Objectives

23. States, in accordance with the provisions of the United Nations Convention on the Law of the Sea on protection and preservation of the marine environment, commit themselves, in accordance with their policies, priorities and resources, to prevent, reduce and control degradation of the marine environment so as to maintain and improve its life support and productive capacities. To this end, it is necessary to:

(a) Apply preventive, precautionary and anticipatory approaches so as to avoid degradation of the marine environment, as well as reducing the risk of long-term or irreversible adverse effects upon it;

(b) Ensure prior assessment of activities which may have significant adverse impacts upon the marine environment;

(c) Integrate protection of the marine environment into relevant general environmental, social and economic development policies;

(d) Develop economic incentives, where appropriate, to apply clean technologies and other means consistent with the internalization of environmental costs, such as the polluter pays principle, so as to avoid degradation of the marine environment;

(e) Improve the living standards of coastal populations, particularly in developing countries, so as to contribute to reducing the degradation of the coastal and marine environment.

[24. States agree that provision of additional financial resources, through appropriate international mechanisms, as well as access to cleaner technologies and relevant research, would be necessary to support action by developing countries to implement this commitment.] 3/

Activities

(a) Prevention, reduction and control of degradation of the marine environment from land-based activities

25. In carrying out their commitment to deal with degradation of the marine environment from land-based activities, States should take action at the national level and, where appropriate, at the regional and subregional levels in concert with action to implement programme area A, and take account of the Montreal Guidelines for the Protection of the Marine Environment from Land-Based Sources. In addition, they should also strengthen and extend bilateral and multilateral cooperation, as appropriate.

26. To this end, States, with the support of the relevant international environmental, scientific, technical and financial organizations, should cooperate, inter alia, to:

(a) Consider updating, strengthening and extending the Montreal Guidelines, as appropriate;

(b) Assess the effectiveness of existing regional agreements and action plans, where appropriate, with a view to identifying means of strengthening action, where necessary to prevent, reduce and control marine degradation caused by land-based activities;

(c) Initiate and promote the development of new regional agreements, where appropriate;

(d) Develop means of providing guidance on technologies to deal with the major types of pollution of the marine environment from land-based sources, according to the best scientific evidence;

(e) Develop policy guidance to relevant global funding mechanisms; 3/

(f) Identify additional steps requiring international cooperation.

27. The UNEP Governing Council is invited to convene, as soon as practicable, an intergovernmental meeting on protection of the marine environment from land-based activities.

28. As concerns sewage, priority actions to be considered by States may include:

(a) Incorporating sewage concerns when formulating or reviewing coastal development plans including human settlement plans;

(b) Building and maintaining sewage treatment facilities in accordance with national policies and capacities and international cooperation available;

(c) Locating coastal outfalls so as to maintain an acceptable level of environmental quality and to avoid exposing shell fisheries, water intakes and bathing areas to pathogens;

(d) Promoting environmentally sound co-treatments of domestic and compatible industrial effluents, with the introduction, where practicable, of controls on the entry of effluents which are not compatible with the system;

(e) Promoting primary treatment of municipal sewage discharged to rivers, estuaries and the sea, or other solutions appropriate to specific sites;

(f) Establishing and improving local, national subregional, and regional, as necessary, regulatory and monitoring programmes to control effluent discharge using minimum sewage effluent guidelines and water quality criteria giving due consideration to the characteristics of receiving bodies and the volume and type of pollutants.

29. As concerns other sources of pollution, priority actions to be considered by States may include:

(a) Establishing or improving, as necessary, regulatory and monitoring programmes to control effluent discharges and emissions including the development and application of control and recycling technologies;

(b) Promoting risk and environmental impact assessments to help ensure an acceptable level of environmental quality;

(c) Promoting assessment and cooperation at the regional level, where appropriate, with respect to the input of point source pollutants from new installations;

(d) Eliminating the emission or discharge of organohalogen compounds which threaten to accumulate to dangerous levels in the marine environment;

(e) Reducing the emission or discharge of other synthetic organic compounds which threaten to accumulate to dangerous levels in the marine environment;

(f) Promoting controls over anthropogenic inputs of nitrogen and phosphorus which enter coastal waters where problems, such as eutrophication, threaten the marine environment or its resources;

(g) Cooperating with developing countries, through financial and technological support, to maximize best practicable control and reduction of substances and wastes that are persistent, liable to bio-accumulate or toxic, and to establish environmentally sound land-based waste disposal alternatives to sea dumping;

(h) Cooperating in the development and implementation of environmentally sound land uses techniques and practices to reduce run-off to water-courses and estuaries which would cause pollution or degradation of the marine environment;

(i) Promoting the use of environmentally less harmful pesticides and fertilizers, and alternative methods for pest control, and considering prohibiting the use of those found to be environmentally unsound;

(j) Adopting new initiatives at national, subregional and regional levels for controlling the input of non-point source pollutants, which require broad changes in sewage and waste management, agricultural practices, mining, construction and transportation.

30. As concerns physical destruction of coastal and marine areas causing degradation of the marine environment, priority actions should include control and prevention of coastal erosion and siltation due to anthropogenic factors related to, inter alia, land-use and construction techniques and practices. Watershed management practices should be promoted so as to prevent, control, and reduce degradation of the marine environment.

(b) Prevention, reduction and control of degradation of the marine environment from sea-based activities

31. States, acting individually, bilaterally, regionally or multilaterally and within the framework of IMO and other relevant international organizations, whether subregional, regional or global, as appropriate, should assess the need for additional measures to address degradation of the marine environment:

(a) From shipping, by:

(i) Supporting wider ratification and implementation of relevant shipping conventions and protocols;

(ii) Facilitating the processes in (i), providing support to individual States upon request to help them overcome the obstacles identified by them;

(iii) Cooperating in monitoring marine pollution from ships, especially for illegal discharges (e.g., aerial surveillance) and enforcing MARPOL discharge provisions more rigorously;

(iv) Assessing the state of pollution caused by ships in particularly sensitive areas identified by IMO and taking action to implement applicable measures, where necessary, within such areas to ensure compliance with generally accepted international regulations;

(v) Taking action to ensure respect of areas designated by coastal States, within their EEZs, consistent with international law, in order to protect and preserve rare or fragile ecosystems, such as coral reefs and mangroves;

(vi) Considering adoption of appropriate rules on ballast water discharge to prevent the spread of non-indigenous organisms;

(vii) Promoting navigational safety by adequate charting of coasts and ship-routing, as appropriate;

(viii) Assessing the need for stricter international regulations to further reduce the risk of accidents and pollution from cargo ships (including bulk carriers);

(ix) Encouraging IMO and IAEA to work together to complete consideration of a Code on the carriage of irradiated nuclear fuel in flasks on board ships;

(x) Revising and updating the IMO Code of Safety for Nuclear Merchant Ships and considering how best to implement a revised code;

(xi) Supporting the ongoing activity within IMO regarding development of appropriate measures for reducing air pollution from ships;

(xii) Supporting the ongoing activity within IMO regarding the development of an international regime governing the transportation of hazardous and noxious substances carried by ships and further consider whether the compensation funds similar to the ones established under the Fund Convention would be appropriate in respect of pollution damage caused by substances other than oil;

(b) From dumping, by:

(i) Supporting wider ratification, implementation and participation in relevant Conventions on dumping at sea including early conclusion of a future strategy for the London Dumping Convention;

(ii) Encouraging the London Dumping Convention parties to take appropriate steps to stop ocean dumping and incineration of hazardous substances;

(c) From offshore oil and gas platforms, by assessing existing regulatory measures to address discharges, emissions, and safety and the need for additional measures;

(d) From ports, by facilitating establishment of port reception facilities for the collection of oily and chemical residues and garbage from ships, especially in MARPOL special areas, and promoting the establishment of smaller scale facilities in marinas and fishing harbours.

32. IMO and as appropriate, other competent United Nations bodies, when requested by the States concerned, should assess, where appropriate, the state of marine pollution in areas of congested shipping, such as heavily used international straits, with a view to ensuring compliance with generally accepted international regulations, particularly those related to illegal discharges from ships, in accordance with the provisions of Part III of the United Nations Convention on the Law of the Sea.

33. States should take measures to reduce water pollution caused by organotin compounds used in anti-fouling paints.

34. States should consider ratifying the Convention on Oil Pollution Preparedness, Response, and Cooperation which addresses, inter alia, the development of contingency plans on the national and international level, as appropriate, including provision of oil spill response material and training of personnel, including its possible extension to chemical spill response.

35. States should intensify international cooperation to strengthen or establish, where necessary, regional oil/chemical spill response centres and/or, as appropriate, mechanisms in cooperation with relevant subregional, regional or global, and where appropriate, industry-based organizations.

Data and information

36. States should, as appropriate, and in accordance with the means at their disposal and with due regard for their technical and scientific capacity and resources, make systematic observations on the state of the marine environment. To this end, States should, as appropriate, consider:

(a) Establishing systematic observation systems to measure marine environmental quality, including causes and effects of marine degradation, as a basis for management;

(b) Regularly exchanging information on marine degradation caused by land-based and sea-based activities and on actions to prevent, control and reduce such degradation;

(c) Supporting and expanding international programmes for systematic observations such as the mussel watch programme, building on existing facilities with special attention to developing countries;

(d) Establishing a clearing house on marine pollution control information, including processes and technologies to address marine pollution control and to support their transfer to developing countries and other countries with demonstrated needs; 4/

(e) Establishing a global profile and database providing information on the sources, types, amounts, and effects of pollutants reaching the marine environment from land-based activities in coastal areas and sea-based sources;

(f) Allocating adequate funding for capacity-building and training programmes to ensure the full participation of, in particular, developing countries in any international scheme under the organs and organizations of the United Nations system for the collection, analysis and use of data and information. 3/

Means of implementation

Financing and cost evaluation

(a) Land-based activities

[37. Since many activities on land have impacts on the marine environment, the cost estimates to control the major sources of pollution and other impacts are very high. A crude extrapolation based on a few regional studies in semi-enclosed seas gives figures ranging from $5-20 billion per year over 20 years for the necessary investments. On the other hand, the benefits

gained from protecting major economic activities in marine and coastal areas far outweigh the costs in the regions studied. Mechanisms such as user fees and charges for pollution violations are needed to raise the necessary sums from those most directly concerned and best able to bear the costs, and to channel the revenues into construction and operation of the necessary facilities. For technical cooperation with developing countries to implement Agenda 21 activities, the following amounts are proposed: $14 million in direct assistance, $4 million to address global issues and $2 million to strengthen international organizations, for a total of $20 million per year. This amount needs to be complemented by major activities contained in other programme areas.]

(b) Sea-based activities

[38. An estimated $84 million per year is needed to build waste reception facilities in ports in developing countries. This will require special funding mechanisms such as loans or grants from international agencies, including the Global Environmental Facility or a system of "Reception Facility Funds", with the assistance of IMO. Income should be raised from shipping to cover at least the operation and maintenance of these facilities, if not to reimburse the capital investment.]

[39. Provision of oil spill response materials and equipment, apart from the larger countries that have already invested hundreds of millions of dollars in stockpiles, is estimated at $50 million per year from 1993 to 2000. To this should be added $40 million per year for technical cooperation and capacity-building in developing countries, all with reference to global issues, including $6 million to strengthen international organizations.]

40. National, subregional and regional action programmes will, where appropriate, require [technological cooperation,] technology transfer, and financial resources, particularly where developing countries are concerned, including:

(a) Assistance to industries in identifying and adopting clean production or cost-effective pollution control technologies;

(b) Planning development and application of low-cost and low-maintenance sewage installation and treatment technologies for developing countries;

(c) Equipment of laboratories to observe systematically human and other impacts on the marine environment;

(d) Identification of appropriate oil and chemical spill control materials, including low-cost locally available materials and techniques, suitable for pollution emergencies in developing countries;

(e) Study of the use of persistent organohalogens that are liable to accumulate in the marine environment to identify those which cannot be adequately controlled and to provide a basis for a decision on a time schedule for phasing them out as soon as practicable;

(f) Establishment of a clearing house on marine pollution control, information, including processes and technologies to address marine pollution control and to support their transfer to developing and other countries with demonstrated needs. 4/

Human resources development

41. States individually or in cooperation with each other and with the support of international organizations, whether subregional, regional or global, as appropriate, should:

(a) Provide training for critical personnel required for the adequate protection of the marine environment as identified by training needs' surveys at the national, regional or subregional levels;

(b) Promote the introduction of marine environmental protection topics into the curriculum of marine studies programmes;

(c) Establish training courses for oil and chemical spill response personnel, in cooperation where appropriate, with the oil and chemical industries;

(d) Conduct workshops on environmental aspects of port operations and development;

[(e) Strengthen and provide secure financing for new and existing specialized international centres of professional maritime education;] 3/

(f) States should, through bilateral and multilateral cooperation support and supplement the national efforts of developing countries as regards human resources development in relation to prevention and reduction of degradation of the marine environment.

Capacity-building

42. National planning and coordinating bodies should be given the capacity and authority to review all land-based activities and sources of pollution for their impacts on the marine environment and to propose appropriate control measures.

43. Research facilities should be strengthened or, where appropriate, developed in developing countries, for systematic observation of marine pollution, environmental impact assessment and development of control recommendations, managed and staffed by local experts.

44. Special arrangements will be needed to provide adequate financial and technical resources to assist developing countries to prevent and solve problems associated with activities that threaten the marine environment.

45. An international funding mechanism should be created for the application of appropriate sewage treatment technologies and building sewage treatment

facilities, including grants or concessional loans from international agencies and appropriate regional funds, replenished at least in part on a revolving basis by user fees. 3/

46. In carrying out these programme activities, particular attention needs to be given to the problems of developing countries who would bear an unequal burden because of their lack of facilities, expertise or technical capacities.

C. Sustainable use and conservation of high seas living resources

Basis for action

47. Over the last decade, fisheries on the high seas have considerably expanded and currently represent approximately 5 per cent of total world landings. The provisions of the United Nations Convention on the Law of the Sea on the marine living resources of the high seas sets forth the rights and obligations of States with respect to conservation and utilization of those resources.

48. However, management of high seas fisheries, including the adoption, monitoring and enforcement of effective conservation measures, is inadequate in many areas and some resources are overutilized. There are problems of unregulated fishing, overcapitalization, excessive fleet size, vessel reflagging to escape controls, insufficiently selective gear, unreliable databases and in general lack of sufficient cooperation between States. Action by States, whose nationals and vessels fish on the high seas, as well as cooperation at the bilateral, subregional, regional and global levels, is essential particularly for highly migratory species and straddling stocks. Such action and cooperation should address inadequacies in fishing practices as well as in biological knowledge, fisheries statistics and improvement in systems for handling data. Emphasis should also be on multi-species management, and other approaches which take into account the relationships among species especially in addressing depleted species, but also in identifying the potential of underutilized or unutilized populations.

Objectives

49. States commit themselves to the conservation and sustainable use of marine living resources on the high seas. To this end, it is necessary to: 3/

(a) Develop and increase the potential of marine living resources to meet human nutritional needs as well as social, economic and development goals;

(b) Maintain or restore populations of marine species at levels which can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships among species;

(c) Promote the development and use of selective fishing gear and practices that minimize waste of catch of target species and minimize bycatch of non-target species;

(d) Ensure effective monitoring and enforcement with respect to fishing activities;

(e) Protect and restore endangered marine species;

(f) Preserve habitats and other ecologically sensitive areas;

(g) Promote scientific research with respect to the marine living resources in the high seas;

[(h) Cooperate to ensure that high seas fishing does not have an adverse impact on the marine living resources under the national jurisdiction of coastal States.]

50. Nothing in paragraph 49 above restricts the right of a State or the competence of an international organization, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals on the high seas more strictly than provided for in that paragraph. States shall cooperate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organizations for their conservation, management and study.

51. The ability of developing countries to fulfil the above objectives is dependent upon their capabilities, including the financial, scientific and technological means at their disposal. Adequate financial, scientific and technological cooperation should be provided to support action by them to implement these objectives. 3/

Activities

Management related

52. States should take effective action, including bilateral and multilateral cooperation, where appropriate at the subregional, regional and global level, to ensure that high seas fisheries are managed in accordance with the provisions of the United Nations Convention on the Law of the Sea. In particular, they should:

(a) Give full effect to these provisions with regard to fisheries populations whose ranges lie both within and beyond exclusive economic zones (straddling stocks);

(b) Give full effect to these provisions with regard to highly migratory species;

(c) Negotiate, where appropriate, international agreements for the effective management and conservation of fishery stocks;

(d) Define and identify appropriate management units;

(e) Develop guidelines for better implementation of the provisions of international law on high seas fisheries, reflected in the United Nations Convention on the Law of the Sea on high seas fisheries.

[53. States whose [nationals] [vessels] fish for straddling stocks on the high seas and the coastal States in whose exclusive economic zones such stocks occur, should cooperate with a view to agreeing on measures [applicable on the high seas] necessary to ensure the conservation and sustainable use of such stocks. Such measures should:

(a) Be consistent with measures applied by the coastal States within the exclusive economic zones;

(b) Give effect to the special interest and responsibility of the coastal State with respect to the portion of the straddling stocks beyond the exclusive economic zones;]

[54. States whose [nationals] [vessels] fish for stocks of highly migratory species on the high seas and coastal States in whose EEZs such stocks occur should cooperate with a view to agreeing on measures [applicable on the high seas] necessary to ensure the conservation and management of such stocks. Such measures should:

(a) Fully recognize the sovereign rights of the coastal States in their EEZs;

(b) Take into account the special interest of the coastal States in these stocks outside their EEZs, thereby avoiding adverse impacts on such stocks within their EEZs.]

[55. bis States bordering on enclosed and semi-enclosed seas should cooperate with each other in accordance with relevant provisions of the Convention on the Law of the Sea, in particular, with respect to the management, conservation, exploration and exploitation of the marine living resources of the sea.]

56. States should ensure that fishing activities by vessels flying their flags in the high seas take place in a manner so as to minimize incidental catch.

57. States should take effective action consistent with international law to monitor and control fishing activities by vessels flying their flags on the high seas to ensure compliance with applicable conservation and management rules, including full, detailed, accurate and timely reporting of catches and effort.

58. States should take effective action consistent with international law, to deter reflagging of vessels by their nationals as a means of avoiding

compliance with applicable conservation and management rules for fishing activities on the high seas.

59. States should prohibit dynamiting, poisoning and other comparable destructive fishing practices.

60. States should fully implement General Assembly resolution 46/215 on large-scale pelagic drift-net fishing.

61. States should take measures to increase the availability of marine living resources as human food by reducing wastage, post-harvest losses and discards, and improving techniques of processing, distribution, and transportation.

Data and information

62. States, with the support of international organizations, whether subregional, regional or global, as appropriate, should cooperate to:

(a) Promote enhanced collection of data necessary for the conservation and sustainable use of the marine living resources of the high seas;

(b) Exchange on a regular basis up-to-date data and information adequate for fisheries assessment;

(c) Develop and share analytical and predictive tools such as stock assessment and bioeconomic models;

(d) Establish or expand appropriate monitoring and assessment programmes.

International and regional cooperation and coordination

63. States, through bilateral and multilateral cooperation and within the framework of subregional and regional fisheries bodies as appropriate, and with the support of other international intergovernmental agencies should assess high seas resource potentials and develop profiles of all stocks (target and non-target).

64. States should ensure, where and as appropriate, adequate levels of coordination and cooperation between subregional, regional and global intergovernmental fisheries bodies.

65. Effective cooperation within existing subregional, regional or global fisheries bodies should be encouraged. Where such organizations do not exist, States should, as appropriate, cooperate to establish such organizations.

66. States with an interest in a high seas fishery regulated by an existing subregional and/or regional high seas fisheries organization of which they are not members, should be encouraged to join that organization, where appropriate.

67. States recognize:

(a) The responsibility of the International Whaling Commission for the conservation and management of whale stocks and the regulation of whaling pursuant to the 1946 International Convention for the Regulation of Whaling;

(b) The work of the International Whaling Commission Scientific Committee in carrying out studies of large whales in particular, as well as of other cetaceans;

(c) The work of other organizations, such as the Inter-American Tropical Tuna Commission and the Agreement on Small Cetaceans in the Baltic and North Sea under the Bonn Convention, in the conservation, management and study of cetaceans and other marine mammals.

68. States should cooperate for the conservation, management and study of cetaceans.

Means of implementation

[Financing and cost evaluation

69. The costs of developing sustainable uses of high seas resources should be borne by utilizing countries. The principal costs of research and management systems in the high seas should also be supported by the States [and the various users]. However, the catalytic funding required to improve the database and scientific knowledge, the effectiveness of fisheries management bodies, and the participation of all coastal countries, especially developing ones, in this effort is estimated at $12 million per year for this global issue, including $5 million to strengthen international and regional organizations.]

Scientific and technological means

70. States, with the support of relevant international organizations, where necessary, should develop collaborative technical and research programmes to improve understanding of the life cycles and migrations of species found on the high seas, including identifying critical areas and life stages.

71. States, with the support of relevant international organizations, whether subregional, regional or global, as appropriate, should:

(a) Develop databases on the high seas marine living resources and fisheries;

(b) Collect and correlate marine environmental data with high seas marine living resources data, including the impacts of regional and global changes brought about by natural causes as well as by human activities;

(c) Cooperate in coordinating research programmes to provide the knowledge necessary to manage high seas resources.

Human resources development

72. Human resources development at the national level should be targeted at both development and management of high seas resources, including training in high seas fishing techniques, and in high seas resource assessment, strengthening cadres of personnel to deal with the high seas resource management and conservation, and related environmental issues, and training observers and inspectors to be placed on fishing vessels.

Capacity-building

73. States with the support, where appropriate, of relevant international organizations, whether subregional, regional and global, should cooperate to develop or upgrade systems and institutional structures for monitoring, control and surveillance as well as the research capacity for assessment of marine living resource population.

74. Special support, including cooperation among States, will be needed to enhance the capacities of developing countries in the areas of data and information, scientific and technological means and human resource development in order to participate effectively in the conservation and sustainable utilization of high seas marine living resources.

D. Sustainable use of marine living resources under national jurisdiction

Basis for action

75. Marine fisheries yield 80 to 90 million tons of fish and shellfish per year, 95 per cent of which is taken from waters under national jurisdiction. Yields have increased nearly fivefold over the past four decades. The provisions of the United Nations Convention on the Law of the Sea on marine living resources of the EEZ and other areas under national jurisdiction, set forth rights and obligations of States with respect to conservation and utilization of those resources.

76. Marine living resources provide an important source of protein in many countries and their use is often of major importance to local communities and indigenous people. Such resources provide food and livelihoods to millions of people and if sustainably utilized, offer increased potential to meet nutritional and social needs, particularly in developing countries. To realize this potential requires improved knowledge of marine living resource stocks, particularly of underutilized and unutilized species, use of new technologies, better handling and processing facilities to avoid wastage and improved quality and training of skilled personnel to effectively manage and conserve the marine living resources of the EEZ and other areas under national jurisdiction. [Emphasis should also be on multi-species management and other approaches that take into account the relationships among species, especially in addressing depleted species, but also in identifying the potential of underutilized or unutilized populations.]

77. Fisheries in many areas under national jurisdiction face mounting problems, including local overfishing, unauthorized incursions by foreign fleets, ecosystem degradation, overcapitalization and excessive fleet sizes, underevaluation of catch, insufficiently selective gear, unreliable databases, increasing competition between artisanal and large-scale fishing, and between fishing and other types of activities.

78. Problems extend beyond fisheries. Coral reefs and other marine and coastal habitats such as mangroves and estuaries are among the most highly diverse, integrated and productive of the earth's ecosystems. They often serve important ecological functions, provide coastal protection, and are critical resources for food, energy, tourism and economic development. In many parts of the world, such marine and coastal systems are under stress or threatened from a variety of sources, both human and natural.

Objectives

79. Coastal States, particularly developing countries and States whose economies are overwhelmingly dependent on the exploitation of the marine living resources of their EEZs, should obtain the full social and economic benefits from sustainable utilization of marine living resources within their EEZs and other areas under national jurisdiction. 3/

80. States commit themselves to the conservation and sustainable use of marine living resources under national jurisdiction. To this end, it is necessary to: 3/

(a) Develop and increase the potential of marine living resources to meet human nutritional needs as well as social, economic and development goals;

(b) Take into account traditional knowledge and interests of local communities, small-scale artisanal fisheries and indigenous people in development and management programmes;

(c) Maintain or restore populations of marine species at levels which can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships among species;

(d) Promote the development and use of selective fishing gear and practices that minimize waste of catch of target species and minimize by-catch of non-target species;

(e) Protect and restore endangered marine species;

(f) Preserve rare or fragile ecosystems as well as habitats and other ecologically sensitive areas. 3/

81. Nothing in paragraph 80 above restricts the right of a coastal State or the competence of an international organization, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals more strictly than provided for in that paragraph. States shall cooperate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organizations for their conservation, management and study.

82. The ability of developing countries to fulfil the above objectives is dependent upon their capabilities, including the financial, scientific and technological means at their disposal. Adequate financial, scientific and technological cooperation should be provided to support action by them to implement these objectives. 3/

Activities

Management related

83. States should ensure that marine living resources of the exclusive economic zone and other areas under national jurisdiction are conserved and managed in accordance with the provisions of the United Nations Convention on the Law of the Sea.

[[84.] States should give attention to issues related to the conservation and management of straddling stocks, migratory species and access to surplus.]

or

[[84.] States should implement the provisions of the Convention on the Law of the Sea with regard to straddling stocks, migratory species and access to surplus.] 5/

85. Coastal States, individually or through bilateral and/or multilateral cooperation and with the support, as appropriate of international organizations, whether of subregional, regional or global intergovernmental organizations, should inter alia:

(a) [Assess] the potential of marine living resources by developing inventories, where necessary, for their conservation and sustainable use;

(b) [Implement] strategies for the sustainable use of marine living resources, taking into account the special needs and interests of small-scale artisanal fisheries, local communities and indigenous people to meet human nutritional and other development needs;

(c) Implement, in particular in developing countries, mechanisms to develop mariculture, aquaculture, small-scale, deep-sea and oceanic fisheries within areas under national jurisdiction where assessments show that marine living resources are potentially available;

(d) Strengthen their legal and regulatory frameworks, where appropriate, including management, enforcement and surveillance capabilities, to regulate activities related to the above strategies;

(e) Take measures to increase the availability of marine living resources as human food by reducing wastage, post-harvest losses and discards, and improving techniques of processing, distribution, and transportation;

(f) Develop and promote the use of environmentally sound technology under criteria compatible with the sustainable use of marine living resources including assessment of environmental impact of major new fishery practices;

(g) Enhance the productivity and utilization of their marine living resources for food and income;

[(h) Identify underutilized or unutilized fish stocks with a view to improving their exploitation pattern, inter alia by granting access to States in accordance with the provisions of the Convention on the Law of the Sea.]

86. Coastal States should explore the scope to expand recreational and tourist activities based on marine living resources including for providing alternative sources of income. Such activities should be compatible with conservation and sustainable development policies and plans.

87. Coastal States should support the sustainability of small-scale artisanal fisheries. To this end, they should, as appropriate:

(a) Integrate small-scale artisanal fisheries development in marine and coastal planning, taking into account the interests of and, where appropriate, encouraging representation of fishermen, small-scale fisherworkers, women, local communities and indigenous people;

(b) Recognize the rights of small-scale fishworkers and the special situation of indigenous people and local communities, including their rights to utilization and protection of their habitats on a sustainable basis;

(c) Develop systems for the acquisition and recording of traditional knowledge concerning marine living resources and environment and promote the incorporation of such knowledge into management systems.

88. Coastal States should ensure that, in the negotiation and implementation of international agreements on the development or conservation of marine living resources, the interests of local communities and indigenous people are taken into account, in particular their right to subsistence.

89. Coastal States, with the support, as appropriate, of international organizations should conduct analyses of the potential for aquaculture in marine and coastal areas under national jurisdiction and apply appropriate safeguards as to the introduction of new species.

90. States should prohibit dynamiting, poisoning and other comparable destructive fishing practices.

91. States should identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and provide necessary limitations on use in these areas, through, inter alia, designation of protected areas. Priority should be accorded, as appropriate, to:

(a) Coral reef ecosystems;

(b) Estuaries;

(c) Temperate and tropical wetlands, including mangroves;

(d) Seagrass beds;

(e) Other spawning and nursery areas.

Data and information

92. States, individually or through bilateral and multilateral cooperation and with the support, as appropriate, of international organizations, whether subregional, regional, or global, should:

(a) Promote enhanced collection and exchange of data necessary for the conservation and sustainable use of the marine living resources under national jurisdiction;

(b) Exchange on a regular basis up-to-date data and information necessary for fisheries assessment;

(c) Develop and share analytical and predictive tools such as stock assessment and bioeconomic models;

(d) Establish or expand appropriate monitoring and assessment programmes;

(e) Complete/update marine biodiversity, marine living resource and critical habitat profiles of EEZs and other areas under national jurisdiction, taking account of changes in the environment brought about by natural causes as well as human activities.

International and regional cooperation and coordination

[93. States, through bilateral and multilateral cooperation, and with the support of relevant United Nations and other international organizations, should cooperate to:

(a) Develop financial and technical cooperation to enhance the capacities of developing countries in small-scale and oceanic fisheries as well as coastal aquaculture and mariculture; 3/

(b) Promote the contribution of marine living resources to eliminate malnutrition and to achieve food self-sufficiency in developing countries, inter alia, by minimizing post harvest losses and managing stocks for guaranteed sustainable yields;

(c) Develop agreed criteria for the use of selective fishing gear and practices to minimize waste of catch of target species and minimize bycatch of non-target species;

(d) Promote seafood quality, including through national quality assurance systems for seafood, in order to promote access to markets, improve consumer confidence and maximize economic returns.]

94. States recognize:

(a) The responsibility of the International Whaling Commission for the conservation and management of whale stocks and the regulation of whaling pursuant to the 1946 International Convention for the Regulation of Whaling;

(b) The work of the International Whaling Commission Scientific Committee in carrying out studies of large whales in particular, as well as of other cetaceans;

(c) The work of other organizations, such as the Inter-American Tropical Tuna Commission and the Agreement on Small Cetaceans in the Baltic and North Sea under the Bonn Convention, in the conservation, management and study of cetaceans and other marine mammals.

95. States should cooperate for the conservation, management and study of cetaceans.

Means of implementation

[Financing and costing

96. The total cost to restructure the fisheries sector is estimated at up to $6 billion per year, excluding investments needed to organize sector reconversion to reduce overcapitalization. The catalytic funding proposed to implement the above activities at the national and regional levels is on the order of $60 million annually to accelerate development and improve management, including $4 million to strengthen regional and international organizations.]

Scientific and technological means

97. States, with the support of relevant intergovernmental organizations, as appropriate, should:

(a) Provide for the transfer of environmentally sound technologies to develop fisheries, aquaculture and mariculture, particularly to developing countries;

(b) Accord special attention to mechanisms for transferring resource information and improved fishing and aquaculture technologies to fishing communities at the local level;

(c) Promote the study, scientific assessment and use of appropriate traditional management systems;

(d) Consider observing, as appropriate, the FAO/ICES Code of Practice for Consideration of Transfer and Introduction of Marine and Freshwater Organisms;

(e) Promote scientific research on marine areas of particular importance for marine living resources, such as areas of high diversity, endemism and productivity and migratory stopover points.

Human resource development

98. States individually or through bilateral and multilateral cooperation and with the support of relevant international organizations, whether subregional, regional or global, as appropriate, should encourage and provide support for developing countries, inter alia, to:

(a) Expand multidisciplinary education, training and research on marine living resources, particularly in social and economic sciences;

(b) Create training opportunities at national and regional levels to support artisanal including subsistence fisheries, to develop small-scale use of marine living resources and to encourage equitable participation of local communities, small-scale fisherworkers, women and indigenous people;

(c) Introduce topics relating to the importance of marine living resources in educational curricula at all levels.

Capacity-building

99. Coastal States, with the support of relevant subregional, regional and global agencies, where appropriate, should:

(a) Develop research capacities for assessment of marine living resources populations and monitoring;

(b) Provide support to local fishing communities, in particular those which rely on fishing for subsistence, indigenous people, and women, including, as appropriate, the technical and financial assistance to organize, maintain, exchange and improve traditional knowledge of marine living resources and fishing techniques, and upgrade knowledge on marine ecosystems;

(c) Establish sustainable aquaculture development strategies, including environmental management in support of rural fish farming communities;

(d) Develop and strengthen, where the need may arise, institutions capable of implementing the objectives and activities related to the conservation and management of marine living resources.

100. Special support, including cooperation among States, will be needed to enhance the capacities of developing countries in the areas of data and information, scientific and technological means and human resource development in order to participate effectively in the conservation and sustainable use of marine living resources under national jurisdiction.

E. Addressing critical uncertainties for the management of marine environment and climate change

Basis for action

101. The marine environment is vulnerable and sensitive to climate and atmospheric changes. Rational use and development of coastal areas, all seas and marine resources, as well as conservation of marine environment, requires the ability to determine the present state of these systems and to predict future conditions. The high degree of uncertainty in present information inhibits effective management and limits the ability to make predictions and assess environmental change. Systematic collection of data on marine environmental parameters will be needed to apply integrated management approaches and to predict effects of global climate change and of atmospheric phenomena, such as ozone depletion on living marine resources and the marine environment. In order to determine the role of the oceans and all seas in driving global systems and to predict natural and man-induced changes in marine and coastal environments, the mechanisms to collect, synthesize and disseminate information from research and systematic observation activities need to be restructured and reinforced considerably.

102. There are many uncertainties about climate change and particularly sealevel rise. Small increases in sealevel have the potential of causing significant damage to small islands and low-lying coasts. Response strategies should be based on sound data. A long-term cooperative research commitment is needed to provide data required for global climate models and to reduce uncertainty. Meanwhile, precautionary measures should be undertaken to diminish the risks and effects, particularly on small islands and on low-lying and coastal areas of the world.

103. Increased ultraviolet radiation derived from ozone depletion has been reported in some areas of the world. An assessment of its effects in the marine environment is needed to reduce uncertainty and to provide a basis for action.

Objectives

104. States, in accordance with provisions of the United Nations Convention on the Law of the Sea on marine scientific research, commit themselves to improve the understanding of the marine environment and its role on global processes. To this end, it is necessary to:

(a) Promote scientific research on and systematic observation and monitoring of the marine environment within the limits of national jurisdiction and high seas, including interactions with atmospheric phenomena such as ozone depletion;

(b) Promote exchange of data and information resulting from scientific research and systematic observation and from traditional ecological knowledge and ensure its availability to policy makers and the public at the national level;

(c) Cooperate with a view to the development of standard inter-calibrated procedures, measuring techniques, data storage and management capabilities for scientific research on and systematic observation of the marine environment.

Activities

Management related

105. States should consider, inter alia:

(a) Coordinating national and regional observation programmes for coastal and near-shore phenomena related to climate change and for research parameters essential for marine and coastal management in all regions;

(b) Providing improved forecasts of marine conditions for the safety of inhabitants of coastal areas and for the efficiency of maritime operations;

(c) Cooperating with a view to adopt special measures to cope with and adapt to potential climate change and sealevel rise, including the development of globally accepted methodologies for coastal vulnerability assessment, modelling and response strategies particularly for priority areas, such as small islands, low-lying and critical coastal areas;

(d) Identifying ongoing and planned programmes of systematic observation of the marine environment, with a view to integrating activities and establishing priorities to address critical uncertainties for ocean and all seas;

(e) Initiating a programme of research to determine the marine biological effects of increased levels of ultraviolet rays due to the depletion of the stratospheric ozone layer and to evaluate the possible effects.

106. Recognizing the important role that oceans and all seas play in attenuating potential climate change, IOC and other relevant competent United Nations agencies with the support of countries having the resources and expertise, should carry out analysis, assessments and systematic observation of the role of oceans as a carbon sink.

Data and information

107. States should consider, inter alia:

(a) Increasing international cooperation particularly with a view to strengthening national scientific and technological capabilities for analysing, assessing and predicting global climate and environmental change;

(b) Supporting the role of the IOC in cooperation with WMO, UNEP and other international organizations in the collection, analysis and distribution of data and information from the oceans and all seas, including as appropriate, through the proposed global ozone observing system (GO_3OS), giving special attention to the need for IOC to develop fully the strategy for providing training and technical assistance for developing countries through its training, education and mutual assistance programme;

(c) Creating national accessible multisectoral information bases, covering the results of research and systematic observation programmes;

(d) Linking these databases to existing data and information services and mechanisms such as the World Weather Watch and Earthwatch;

(e) Cooperating with the view to the exchange of data and information and its storage and archiving through the world and regional data centres;

(f) Cooperating to ensure full participation of developing countries, in particular, in any international scheme under the organs and organizations of the United Nations system for the collection, analysis and use of data and information.

108. States should consider bilaterally and multilaterally and in cooperation with international organizations whether subregional, regional, interregional or global, where appropriate:

(a) Providing technical cooperation in developing the capacity of coastal and island States for marine research and systematic observation, and for using its results;

(b) Strengthening existing national institutions and creating, where necessary, international analysis and prediction mechanisms in order to prepare and exchange regional and global oceanographic analyses and forecasts and to provide facilities for international research and training at national, regional and subregional levels, where applicable.

109. In recognition of the value of Antarctica as an area for the conduct of scientific research, in particular essential to understanding the global environment, States carrying out such research activities in Antarctica should, as provided for in article III of the Antarctic Treaty, continue to:

(a) Ensure that data and information resulting from such research is freely available to the international community; and

(b) Enhance access of the international scientific community and specialized agencies of the United Nations to such data and information including the encouragement of periodic seminars and symposia.

110. States should strengthen high-level inter-agency, subregional, regional and global coordination, as appropriate, and review mechanisms to develop and integrate systematic observation networks. This would include:

(a) Review of existing regional and global databases;

(b) Mechanisms to develop comparable and compatible techniques, validate methodologies and measurements, organize regular scientific reviews, options for corrective measures, agree on formats for presentation and storage, and communicate the information gathered to potential users;

(c) Systematic observation of coastal habitats and sealevel changes, inventories of marine pollution sources and reviews of fisheries statistics;

(d) Organization of periodic assessments of ocean and all seas and coastal area status and trends.

111. International cooperation through relevant organizations within the United Nations system should support countries to develop and integrate regional systematic long-term observation programmes, when applicable, into the Regional Seas Programmes in a coordinated fashion to implement, where appropriate, subregional, regional and global observing systems based on the principle of exchange of data. One aim should be the predicting of the effects of climate-related emergencies on existing coastal physical and socio-economic infrastructure.

112. Based on the results of research on the effects of the additional ultraviolet radiation reaching the Earth's surface, in the fields of human health, agriculture and marine environment, States and international organizations should consider taking appropriate remedial measures. 6/

[113. The estimate of costs to ensure participation in the implementation of the recommendations in this section needs to be reconsidered in the light of conclusions on financial matters.]

114. The developed countries should provide the financing for the development and implementation of the GO_3OS system.

115. To address critical uncertainties through systematic coastal and marine observations and research, coastal States should cooperate in the development of procedures which allow for comparable analysis and soundness of data. They should also cooperate on a subregional and regional basis, through existing programmes where applicable, share infrastructure and expensive and sophisticated equipment, develop quality assurance procedures and develop human resources jointly. Special attention should be given to transfer of scientific and technological knowledge and means to support States particularly developing countries in the development of endogenous capabilities.

116. International organizations should support, when requested, coastal countries implement research projects on the effects of additional ultraviolet radiation.

117. States, individually or through bilateral and multilateral cooperation with the support as appropriate of subregional, regional and global organizations, should develop and implement comprehensive programmes, particularly in developing countries for a broad and coherent approach to meeting their core human resource needs in the marine sciences.

Capacity-building

118. States should strengthen or establish as necessary, national scientific and technological oceanographic commissions or equivalent bodies, to develop support and coordinate marine science activities and work closely with international organizations.

119. States should use existing subregional and regional mechanisms, where applicable, to develop knowledge of the marine environment, exchange information, organize systematic observations and assessments, and make most effective use of scientists, facilities and equipment. They should also cooperate in the promotion of endogenous research capabilities in developing countries.

F. Strengthening international, including regional, cooperation and coordination

Basis for action

120. It is recognized that the role of international cooperation is to support and supplement national efforts. Implementation of strategies and activities under the programme areas relative to marine and coastal areas and seas require effective institutional arrangements at national, regional, subregional and global levels, as appropriate. There are numerous national and international including regional institutions, both within and outside the United Nations system, with competence in marine issues, and there is a need to improve coordination and strengthen links among them. It is also important to ensure that an integrated and multisectoral approach to marine issues is pursued at all levels.

Objectives

121. States commit themselves, in accordance with their policies, priorities and resources, to promote institutional arrangements necessary to support the implementation of the programme areas in this chapter. To this end, it is necessary, as appropriate, to:

(a) Integrate relevant sectoral activities addressing environment and development in marine and coastal areas at national, subregional, regional and global levels, as appropriate;

(b) Promote effective information exchange and, where appropriate, institutional linkages between bilateral and multilateral national, regional, subregional and interregional institutions dealing with environment and development in marine and coastal areas;

(c) Promote within the United Nations system, regular intergovernmental review and consideration of environment and development issues with respect to marine and coastal areas;

(d) Promote the effective operation of coordinating mechanisms for the components of the United Nations system dealing with issues of environment and development in marine and coastal areas, as also links with relevant international development bodies.

Activities

Management-related

(a) Global

122. The General Assembly should provide for regular consideration, within the United Nations system, at the intergovernmental level of general marine and coastal issues, including environment and development matters, 7/ and should request the Secretary-General and Executive Heads of United Nations agencies and organizations to:

(a) Strengthen coordination and develop improved arrangements among the relevant United Nations organizations with major marine and coastal responsibilities, including their regional and subregional components;

(b) Strengthen coordination between those organizations and other United Nations organizations, institutions and specialized agencies dealing with development, trade and other related economic issues, as appropriate;

(c) Improve representation of United Nations agencies dealing with the marine environment in United Nations system-wide coordination efforts;

(d) Promote where necessary, greater collaboration between the United Nations agencies and regional and subregional coastal and marine programmes;

(e) Develop a centralized system to provide for information on legislation and advice on implementation of legal agreements on marine environmental and development issues.

[123. Settlement of disputes, such as on trade and environment, should be dealt with in appropriate bilateral, regional and international forums, e.g. GATT, in accordance with established international rules and dispute settlement agreements as well as with multilateral standards to be agreed upon, giving due consideration to concerns for sustainable development. Pending enactment of such standards, States should refrain from taking unilateral non-tariff measures to protect a given marine resource.]

(b) Regional

124. States should consider, as appropriate:

(a) Strengthening, and extending where necessary, intergovernmental regional cooperation, the Regional Seas Programmes of UNEP, regional and subregional fisheries organizations and regional commissions;

(b) Introduce, where necessary, coordination among relevant United Nations and other multilateral organizations at the regional and subregional levels including consideration of co-location of their staff;

(c) Arrange for periodic intraregional consultations;

(d) Facilitate access to and use of expertise and technology through relevant national bodies to regional and subregional centres and networks, such as the Regional Centres for Marine Technology.

Data and information

125. States should, where appropriate:

(a) Promote exchange of information on marine and coastal issues;

(b) Strengthen the capacity of international organizations to handle information and support the development of national, regional and subregional data and information systems, where appropriate. This could also include networks linking countries with comparable environmental problems;

(c) Further develop existing international mechanisms such as Earthwatch and GESAMP.

Means of implementation

Financing and cost evaluation

[126. The proposed cost for strengthening regional cooperation is $12 million per year in additional support for international organizations and regional

coordinating units, and at least $25 million annually in further direct support to activities at the regional level. Improving international coordination and strengthening the global role of the United Nations system to implement Agenda 21 in oceans and coastal areas would cost a proposed $12 million per year, which would approximately double present expenditures and would catalyse and coordinate much larger national expenditures.]

Scientific and technological means, human resource development and capacity-building

127. The means of implementation outlined in the other programme areas on marine and coastal issues, under the sections on Scientific and technological means, human resource development and capacity-buildirg are entirely relevant for this programme area as well. Additionally, States should, through international cooperation, develop a comprehensive programme for meeting the core human resource needs in marine sciences at all levels.

G. Sustainable development of small islands

Basis for action

128. Small island developing States, and islands supporting small communities are a special case both for environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographic dispersion and isolation from markets, disadvantage them economically and prevent economies of scale. For small island developing States the ocean and coastal environment is of strategic importance and constitutes a valuable development resource.

129. Their geographic isolation has resulted in their habitation of a comparatively large number of unique species of flora and fauna, giving them a very high share of global biodiversity. They also have rich and diverse cultures with special adaptations to island environments and knowledge of the sound management of island resources.

130. Small island developing States have all the environmental problems and challenges of the coastal zone concentrated in a limited land area. They are considered extremely vulnerable to global warming and sealevel rise with certain small low-lying islands facing the increasing threat of the loss of their entire national territories. Most tropical islands are also now experiencing the more immediate impacts of increasing frequency of cyclones, storms and hurricanes associated with climate change. These are causing major set-backs to their socio-economic development.

131. Because small island development options are limited, there are special challenges to planning for and implementing sustainable development. Small island developing countries will be constrained in meeting these challenges without the cooperation and assistance of the international community.

132. States commit themselves to addressing the problems of sustainable development of small-island developing States. To this end it is necessary:

(a) To adopt and implement plans and programmes to support the sustainable development and utilization of their marine and coastal resources, including meeting essential human needs, maintaining biodiversity and improving the quality of life for island people;

(b) To adopt measures which will enable island States to cope effectively, creatively and sustainably with environmental change and to mitigate impacts and reduce the threats posed to marine and coastal resources.

Activities

Management-related

133. Small island developing States, with the assistance as appropriate of the international community and on the basis of existing work of national and international organizations, should:

(a) Study the special environmental and developmental characteristics of small islands including an environmental profile and inventory of their natural resources, critical marine habitats and biodiversity;

(b) Develop techniques for determining and monitoring the carrying capacity of small islands under different development assumptions and resource constraints;

(c) Prepare medium- and long-term plans for sustainable development that emphasize multiple use of resources, integrate environmental considerations with economic and sectoral planning and policies, and which define measures for maintaining cultural and biological diversity, conserve endangered species and critical marine habitats;

(d) Adapt coastal area management techniques, such as planning, siting, environmental impact assessments, using GIS, suitable to the special characteristics of small islands, taking into account the traditional and cultural values of indigenous people of island countries;

(e) Review the existing institutional arrangements and identify and undertake appropriate institutional reforms essential to the effective implementation of sustainable development plans, including intersectoral coordination and community participation in the planning process;

(f) Implement sustainable development plans, including the review and modification of existing unsustainable policies and practices;

(g) Based on precautionary and anticipatory approaches, design and implement rational response strategies to address the environmental, social and economic impacts of climate change and sealevel rise, and prepare appropriate contingency plans;

(h) Promote environmentally sound technology for sustainable development within small island States and identify technologies which should be excluded because of their threats to essential island ecosystems.

Data and information

134. Additional information on the geographic, environmental, cultural and socio-economic characteristics of islands should be compiled and assessed to assist in the planning process. Existing island databases should be expanded and geographic information systems developed and adapted to suit the special characteristics of islands.

135. Small island developing States, with the support, as appropriate, of regional, international organizations, whether subregional or global, should develop and strengthen inter-island, regional and interregional cooperation and information exchange, including periodic regional and global meetings on sustainable development of small island developing States with the first Global Conference on the sustainable development of small island developing States to be held in 1993.

136. International organizations, whether subregional, regional or global, must recognize the special development requirements of small island developing States and give adequate priority in the provision of assistance, particularly with respect to the development and implementation of sustainable development plans.

Means of implementation

Financing and cost evaluation

[137. Technical cooperation costs to implement these activities amount to $7 million per year. A programme on integrated planning for sustainable development of islands will cost about $130 million per year, to be financed by private and public sources. About $40 million could come from the international community. Since many small islands will never develop an adequate economic or population base to provide all of the services necessary for a reasonable quality of life, some external support will frequently be required on a continuing basis. In addition, the need to maintain the island share of global biodiversity will further limit development options and should be supported by the international community with at least $3 million per year.]

Scientific and technical means

138. Centres for the development and diffusion of scientific information, advice on technical means and technologies appropriate to small island States, especially with reference to the management of the coastal zone, EEZ and marine resources should be established or strengthened as appropriate on a regional basis.

Human resource development

139. Since populations of small island developing States cannot maintain all necessary specializations, training for integrated coastal management and development should aim to produce cadres of managers or scientists, engineers and coastal planners able to integrate the many factors which need to be considered in integrated coastal management. Resource users should be prepared to execute both management and protection functions and to apply the polluter pays principle and support the training of their personnel. Educational systems should be modified to meet these needs and special training programmes developed in integrated island management and development. Local planning should be integrated in educational curricula of all levels and public awareness campaigns developed with the assistance of NGOs and indigenous coastal population.

Capacity-building

140. The total capacity of small island developing States will always be limited. Existing capacity must therefore be restructured to efficiently meet the immediate needs for sustainable development and integrated management. At the same time adequate and appropriate assistance from the international community must be directed at strengthening the full range of human resources needed on a continuous basis to implement sustainable development plans.

141. New technologies which can increase the output and range of capability of the limited human resources should be employed to increase the capacity of very small populations to meet their needs. The development and application of traditional knowledge to improve the capacity of countries to implement sustainable development should be fostered.

Notes

1/ References to the United Nations Convention on the Law of the Sea in this chapter of Agenda 21 do not prejudice the position of any State with respect to signature, ratification of or accession to the Convention.

2/ Where there is uncertainty on sovereignty or no agreement over delimitation, nothing in the programme areas of this chapter should be interpreted as prejudicing the rights of the States involved in a dispute of sovereignty or in the delimitation of the maritime areas concerned.

3/ This paragraph will be re-examined in light of discussions on financial issues in plenary.

4/ The text in this subparagraph will be readdressed following transfer of technology discussions in plenary.

5/ Location of this paragraph, if any, is still under consideration.

Notes (continued)

6/ The group recommended that this paragraph be moved to the chapter on protection of the atmosphere.

7/ This text may need to be reviewed in the light of the outcome of discussions on general follow-up to the Conference.